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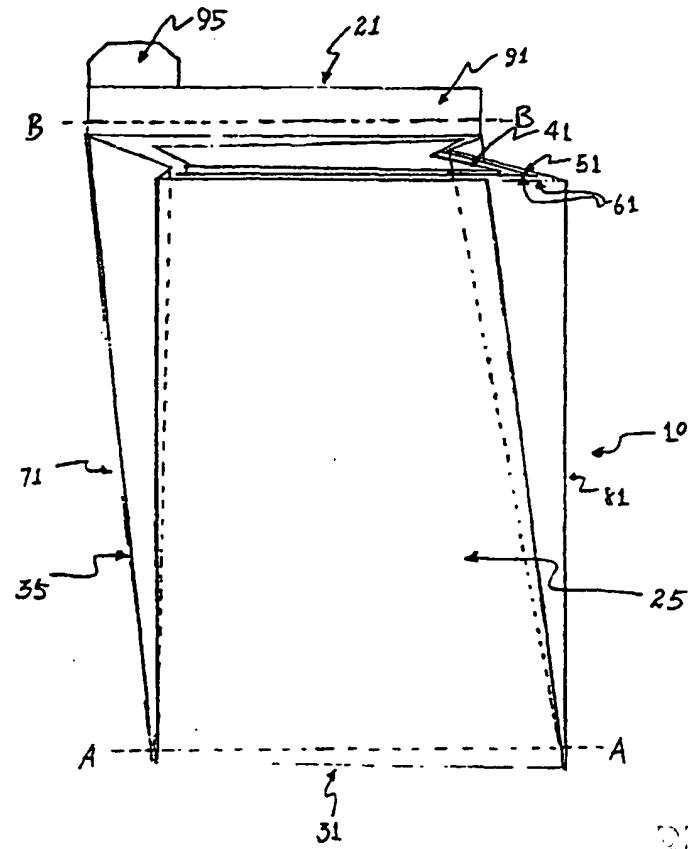
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MULTIWALL BAG WITH EASY OPEN AND RECLOSE**FIELD OF THE INVENTION**

The present invention relates to bags and more particularly to multiwall bags
5 adapted for easy opening and reclosing by a user.

BACKGROUND OF THE INVENTION

Pinch bottom open mouth (PBOM) bags are commonly known. Such bags typically consist of an inner tube composed of an inner ply of a heat sealable plastic
10 material. An outer tube contiguously welded to the inner tube typically consists of one or more plies of paper or other flexible material. The inner tube of plastic material is integrated at bag ends with one or more outer plies of non-heat sealable material such as paper. The plastic ply may be heat sealed or adhesively sealed to closure and severed from the outer plies at the closed end prior to commodity filling
15 and also after filling, by combined heat and pressure applied to the outermost ply, whereby upon closure of the outer plies at the open bag end, the commodity is packaged within the heat sealed inner plastic ply with the latter sealed within the outer plies, for removal intact with its packaged contents upon opening of the outer plies. Typically, gussets may additionally be disposed on the bottom end or
20 sidewalls of a PBOM bag in order to make empty bags stand upright for easy loading and, additionally, to increase the storage capacity within the bag.

Recloseable bags are also common, especially in the food packaging industry.

Such bags typically ensure the freshness of the commodities packaged therein by allowing a consumer to reclose the bag after opening. Various methods have been attempted for reclosing bags. For instance, bags have been made recloseable with the

- 5 use of a zipper along the mouth end of the bags. Such zippers can be opened and closed either by digital pressure or by the use of a slider mounted to the zipper.

Other bags have been made recloseable by sewn threads interposed circumferentially along the mouth of the bags. However, both of these methods suffer some defect.

- 10 Zippers can be unintentionally caught on the outer ply of a bag and prevent their easy open and closure. Similarly, circumferential threads may become disjointed on the outer tube of a bag and prevent the easy opening and resealing of the bag.

However, recloseable PBOM bags are even more difficult to manufacture. A user of a recloseable PBOM bag requires that the numerous outer plies of the outer tube be easily torn and adhered with little pressure. Additionally, recloseable PBOM 15 bags with zippers or threads have been hard to manufacture and difficult for consumers and packagers to accept. Another opening and closing method that has been attempted for PBOM bags is a label on a card which is affixed to the outer tube of a PBOM bag. However, the label must be strong enough to tear open a number of plies on the outer tube and the inner tube with only moderate digital pressure, while 20 bearing enough adhesive to allow for easy reclosing of the bag. To date, balancing the need for a stronger adhesive while allowing a user to peel off the label initially with only moderate pressure has been problematic.

Therefore there is a need for PBOM bags which are both easy to open and easy to reseal.

SUMMARY OF THE INVENTION

5 The present invention is a PBOM bag adapted for easy opening and easy reclosing. The bag comprises a pinch closure at one end and a card tab for opening and reclosing the bag at an opposite open mouth end. The card includes a front planar wall and back planar wall with a three-ply label affixed to the back wall of the card and a tab disposed on the card which can be manipulated by a user for prying
10 open the bag. The card is attached to a notch disposed horizontally along an inner ply of the bag. The notch is disposed parallel to the open end on an inner ply of the outer tube of the bag to make tearing away easier for a user of the bag. The bag as thus formed constitutes the multiwall bag of the present invention ready for use by a packager of a commodity to be stored in the bag. After the bag is filled at the open
15 15 end with a commodity to be packaged, the inner pouch is may be heat sealed to closure adjacent said open end. The inner pouch can optionally be adhesively sealed using hot melt adhesive. The inner pouch is severed thereat at the open end to seal the pouch closed at said end and to completely sever the pouch containing the commodity from the outer tube which is thereupon closed in the outer plies at the
20 20 open end, again in a sewn or pinch bottom closure. Additionally, gussets may be

formed on the vertical sidewalls of the bag or on the bottom wall of the bag to make manufacture of the bag and filling of commodities easier.

As thus packaged, the commodity is contained within a completely sealed, sift and leak proof inner pouch which is in turn housed within a completely sealed 5 outer tube for dual protection against contamination or insect penetration, and wherein the inner pouch is completely attached to the outer tube. A user of the bag, by using the tab attached on the card may open the bag with a moderate pull consequently tearing apart both the outer tube and the inner tube of the bag and opening its contents. Reclosing the bag is accomplished by using the three-ply label 10 to seal the plies of the outer tube and the inner tube at the open end by moderate digital pressure.

The plastic ply is bonded at both bag ends to the contiguous ply. The plastic 15 ply is heat sealed to closure at its base and folded over with the outer plies and the latter adhered to the opposite bag wall in a pinch bottom end closure. At the open bag end after commodity filling, the inner tube at the open end is heat sealed to the outer plies and the outer plies are closed. When the filled bag is opened in the outer 20 plies at the top closure by means of a tab attached to a card, the inner tube is withdrawn intact with the card to form a spout.

In the bag of the present invention wherein the inner plastic ply is completely 25 sealed in packaged contents and completely attached to the outer tube, all that is required for discharging the packaged contents is to open the bag in its outer plies at

one end by pulling at the tabs of the card. Thereafter, a consumer may upend the bag to empty the contents of the bag, leaving the remaining contents of the bag intact as well as the outer bag structure. Thereafter, a consumer may reclose the opening of the bag by resealing the easy open card onto the opening of the bag.

5 Multiwall bags according to the invention find special utility for the packaging and shipment in about 10 to 100 pound lots, of powdered comestibles, such as powdered dry milk or eggs, flour, soya meal, cereals, pet food, and also chemicals, such as pharmaceuticals, and odoriferous materials, such as fertilizer.

10 **BRIEF DESCRIPTION OF THE DRAWINGS:**

A more complete understanding of the present invention may be obtained by considering the following description in conjunction with the drawings in which:

Figure 1 is a perspective view of a multiwall, gusseted, pinch bottom open mouth bag according to the present invention as factory produced and supplied to a
15 packer of the commodity to be packaged.

Figure 2 is a perspective view of a multiwall, gusseted, pinch bottom open mouth bag according to the present invention as commodity filled and closed.

Figures 3(a), 3(b) and 3(c) are, respectively, front, rear and vertical cross sections of the card.

Figures 4(a), 4(b) and 4(c) are elevational views of, respectively, the outer
ply, the middle ply and the inner ply of the bag of the invention.

DETAILED DESCRIPTION:

5 Referring to Figure 1, there is shown a perspective view of an exemplary embodiment of the bag 10 of the present invention. The bag 10 is comprised of a top end 21 and a bottom end 31 designated generally in the figures, with the top end open for loading of commodities at a packaging site. The bottom end 31 is typically pinch closed for extra strength. Sidewalls 71 and 81 may be gusseted for greater volume of
10 product while keeping the bag narrow for easy storage. One wall of the bag is generally designated 25 and another wall is generally designated as 35. Wall 25 may be referred to as the first or front wall and wall 35 as the second or back wall. The back wall 35 has an extension 91 at one end beyond the respective end edge of the front wall 25.

15 An inner tube 41 of a heat sealable plastic material such as polyethylene is disposed contiguously within an outer tube 51 which may comprise a plurality of contiguous plies 61. Although Figure 1 illustrates a single ply, it should be understood that multiple plies of non-heat sealable material can be contiguously added to the outer tube 51 for appropriate strength.

Extension 91 protruding from the back panel of bag 10 is used to seal the bag after the bag has been loaded with the appropriate commodity. Extension 91 includes a card 95 affixed to a corner thereof and protruding from the back thereof. Card 95 will be described in detail in conjunction with Figure 3. After loading of the 5 commodity, extension 91 is folded along line B--B over the front wall 25 of the bag. The inner tube 41 is heat sealed to the outer tube starting at the opposing ends 21 and 31, leaving the inner tube attached to the outer tube from the top end 21 through bottom end 31. By applying heat bars in a known method at opposing ends to the outer tube, the inner tube is made to seal to the outer tube. The temperature and the 10 time needed to seal the plastic inner tube to the paper outer tube will vary depending upon the thickness of the material used for the inner tube and the total thickness of the outer tube.

A standard pinch bottom closure is formed by using fold line A--A at the lower end of the outer tube. The contiguous outer plies are oppositely stepped about 15 the fold line A--A so that an appropriate pinch closure is made. It is noted that Figure 1 is drawn to a bag with a top end 31 open and the bottom end 21 pinch closed. However, both ends may be pinch closed. After making the closure at the bottom end, a folded overlapping arrangement is created. At the open end 31, each 20 ply is stepped up starting at an outermost front 44 of the ply 16 and proceeding to an outermost rear 46 of ply 16, with the exception of the inner plastic ply 12, which is flush cut evenly with the innermost non-heat sealable ply 20.

Referring to Figure 2, there is shown filled bag 10 closed in the manner described above for closing the open end. The packaged commodity will be completely sealed within the inner tube which provides an inner sealed pouch closed at both ends 21 and 31. Generally, the outer plies 61 (not shown in Figure 2) are 5 progressively stepped up from the outermost to the innermost ply in the front wall 25 and the back wall 35. For closing the bag in its outer plies 61 at the top end 21, a hot melt reactivatable adhesive in a dormant state is preapplied to at least parts of the extension 21 prior to folding thereof along fold line B--B. A suitable adhesive is a thermoplastic resin adhesive which may be a composition of polyethylene, wax and a 10 tackifier, such as a rosin ester.

Referring to Figures 3(a) and 3(b), there are shown detailed front and rear views of the card 95 of the present invention. Figure 3(a) illustrates the front of the card as it is affixed to the open end of the bag 10 of the present invention. Figure 3(b) illustrates the back of the card as it is affixed to the open end of the bag 10 of 15 the present invention. As illustrated in Figure 3(a), the card 95 is generally rectangular in shape with a tab 105 extruding from the bottom end of the card. General instructions for the user can be inserted onto the face of the card 95 for consumer's benefit.

In Figure 3(b), the rear view card 95 illustrates the detailed structure of the 20 adhesive applied to the back of the card to be affixed to the front wall 25 of the bag of the invention. The card comprises a three-ply label with the outermost layer being

an adhesive 115 laid down in a step pattern. In a preferred embodiment, the step pattern is laid down in a vertical parallel pattern as shown in Figure 3(b). The vertical pattern is advantageous in allowing the user to pry open the tab with moderate digital pressure. No adhesive is laid down on the tab portion 105 of the
5 rear of the card.

Referring to Figure 3(c), there is shown a cross-section of card 95 taken at line D--D of Figure 3(a) and 3(b). Card 95 comprises a stiff cardboard layer 155 atop a silicone release coating 145. The silicone release coating lies atop a MYLAR (polyester film) strip 135 which is atop an adhesive 115 laid below the MYLAR
10 (polyester film) strip in a step pattern. As thus constituted, the card 95 is adapted for easy opening and reclosing of the bag with moderate digital pressure.

Referring to Figures 4(a), there is shown an elevational view of the top section of back wall 35 of the outer ply of the bag 10 of the invention. As can be seen, the figure shows the outer ply 51 of the bag as it is laid flat in planar fashion
15 prior to full assembly of the bag. Fold lines F--F, G--G, H--H and I--I generally designate separations of the back wall 35 and the sidewall sections 71 and 81 in Figures 4(a), 4(b) and 4(c). Reference line E--E, repeated in Figures 4(b) and 4(c), is a line that is flush with the top of the bag at sidewall sections 71 and 81. It can be seen that extension 91 is protruded from the back wall 35 of the bag so that the
20 extension section can be folded over the E--E line for bag assembly. Extension 91 can be at a vertical elevation of approximately 1" from reference line E--E. In

addition, sidewalls 71 and 81 are flush with the E--E line. Front wall 25 is cut just below the reference line E--E and can be at a vertical elevation of approximately 1.25" below the reference line E--E.

Similarly, referring to Figure 4(b), there is shown an elevational view of back
5 wall 35 of a middle ply of the bag 10 of the invention. Laid out in a planar fashion, the middle ply has sidewalls 71 and 81 which are flush with reference line E--E. Extension 91 of the back wall 35 of the middle ply is protruded from the reference line E--E so that the middle ply is folded along with the outer ply during assembly of the bag. Extension 91 can be at a vertical elevation of approximately 0.75" above the
10 reference line E--E. Front wall 25 is cut just below the reference line E--E and can be at a vertical elevation of approximately 1" below the reference line E--E.

Referring to Figure 4(c), there is shown an elevational view of the back wall 35 of an inner tube of bag 10 of the present invention. Laid out in a planar fashion, the inner tube is flush with the E--E line at the back wall 35 and the sidewalls 71 and
15 81 with a notch section 5 below the E--E line at one corner of the front wall 25. The notch section 5 is generally aligned with the card label of the bag so that the bag as fully assembled has card 95 (not shown in Figure 4) laid over the notch section generally. The notch section 5 is approximately 0.25" elevationally below the reference line E--E. It can be seen that the tearing away of the label is made easier
20 for a user of the bag with the notch section 5 disposed on the inner tube of the bag of the invention.

It will be understood by one of ordinary skill in the art that various modifications can be made without departing from the spirit of the invention. For example, by adding gussets to the bottom of a PBOM bag, the bag is made even stronger and advantageously can be stored upright for easy loading.

5 Although the present invention is described in illustrative embodiments concerning PBOM bags, it will be understood by one of ordinary skill in the art that the invention can be easily modified for other types of multiwall bags such as the stand open satchel (SOS) bag.

Although the present invention is described in various illustrative
10 embodiments, it is not intended to limit the invention to the precise embodiments disclosed herein. Accordingly, this description is to be construed as illustrative only. Those who are skilled in this technology can make various alterations and modifications without departing from the scope and spirit of this invention. Therefore, the scope of the present invention shall be defined and protected by the
15 following claims and their equivalents. The exclusive use of all modifications within the scope of the claims is reserved.

CLAIMS

What is claimed is:

1. A multiwall bag of tubular form comprising:
 - 5 an inner tube made of heat sealable material;
 - an outer tube made of non-heat sealable material having an open end and a closed end and a front wall and a back wall, said outer tube contiguous with the inner tube; and
 - a card extruding from the open end of said outer tube along the back wall;
- 10 whereby said card is adapted for opening and reclosing the bag.
2. The multiwall bag of claim 1 wherein said inner tube is made of plastic material.
- 15 3. The multiwall bag of claim 2 wherein said inner tube is made of polyethylene.
4. The multiwall bag of claim 1 wherein said outer tube is paper.
- 20 5. The multiwall bag of claim 1 wherein said outer tube comprises at least one ply.

6. The multiwall bag of claim 5 wherein said at least one ply is paper.

7. The multiwall bag of claim 6 wherein said at least one ply is kraft paper.

5

8. The multiwall bag of claim 1 wherein said card is made of paper.

9. The multiwall bag of claim 8 wherein said card is made of cardboard.

10 10. The multiwall bag of claim 1 wherein said card has a label.

11. The multiwall bag of claim 10 wherein said label is a three-ply label.

12. The multiwall bag of claim 11 wherein said three-ply label comprises:

15 an adhesive;

a MYLAR (polyester film) strip laid on said adhesive; and

a silicone release coating laid on said MYLAR (polyester film) strip.

13. The multiwall bag of claim 12 wherein said adhesive is step patterned.

20

14. The multiwall bag of claim 1 wherein said card has a tab with no applied adhesive.

15. A pinch bottom open mouth bag comprising:
 - an inner tube made of heat sealable material;
 - an outer tube made of non-heat sealable material having an open end and a
- 5 closed end and a front wall and a back wall, said outer tube contiguous with the inner tube; and
 - a card extruding from the open end of said outer tube along the back wall; whereby said card is adapted for opening and reclosing the bag.
- 10 16. The pinch bottom open mouth bag of claim 15 wherein said inner tube is made of plastic material.
17. The multiwall bag of claim 16 wherein said inner tube is made of polyethylene.
- 15
18. The multiwall bag of claim 15 wherein said outer tube is paper.
19. The multiwall bag of claim 15 wherein said outer tube comprises at least one
- ply.
- 20
20. The multiwall bag of claim 19 wherein said at least one ply is paper.

21. The multiwall bag of claim 20 wherein the innermost of said at least one ply is kraft paper.

22. The multiwall bag of claim 15 wherein said card is made of paper.

5

23. The multiwall bag of claim 22 wherein said card is made of cardboard.

24. The multiwall bag of claim 15 wherein said card has a label.

10 25. The multiwall bag of claim 24 wherein said label is a three-ply label.

26. The multiwall bag of claim 25 wherein said three-ply label comprises:
an adhesive;
a MYLAR (polyester film) strip laid on said adhesive; and
15 a silicone release coating laid on said MYLAR (polyester film) strip.

27. The multiwall bag of claim 26 wherein said adhesive is step patterned.

28. The multiwall bag of claim 15 wherein said card has a tab with no applied
20 adhesive.

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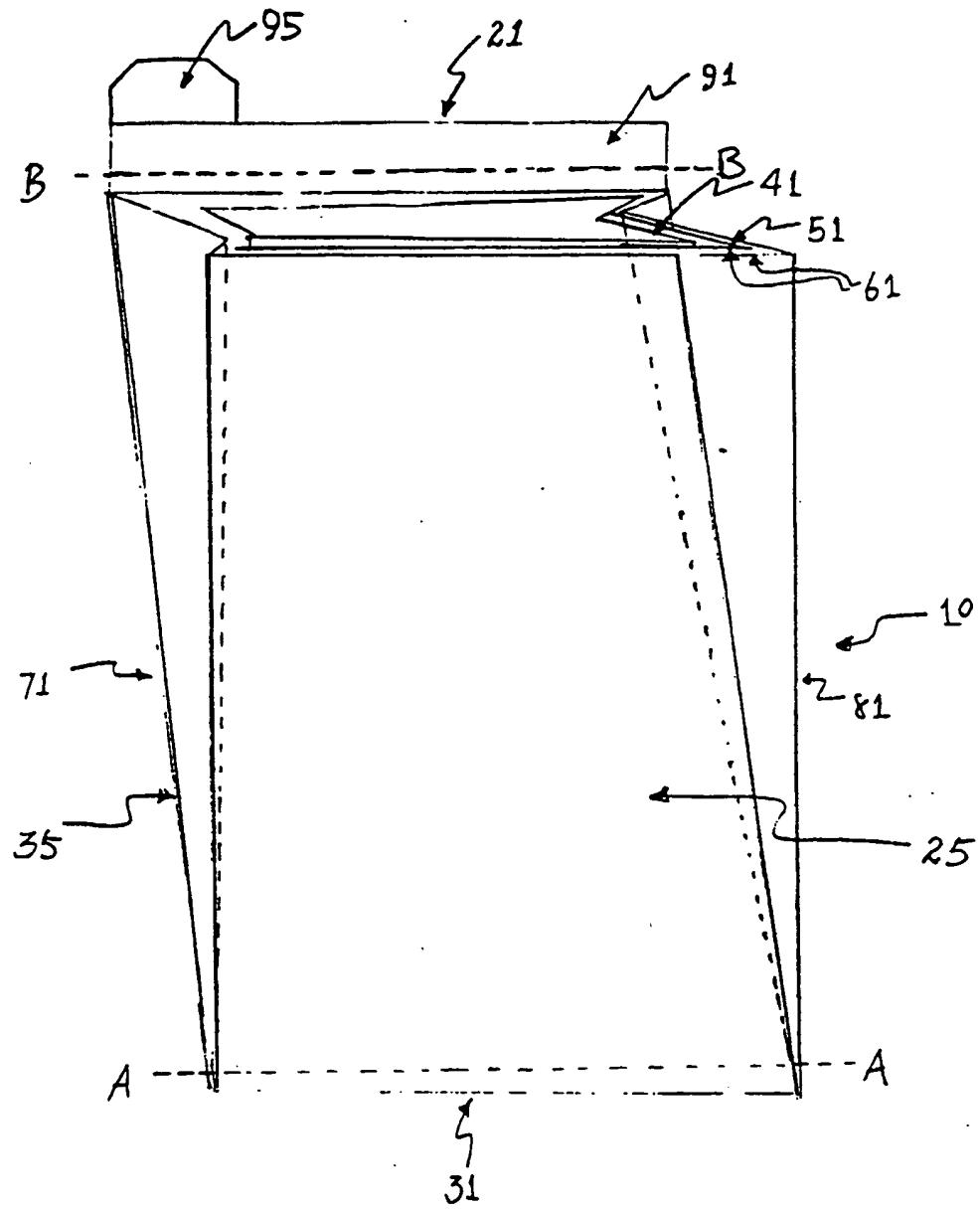


FIGURE 1

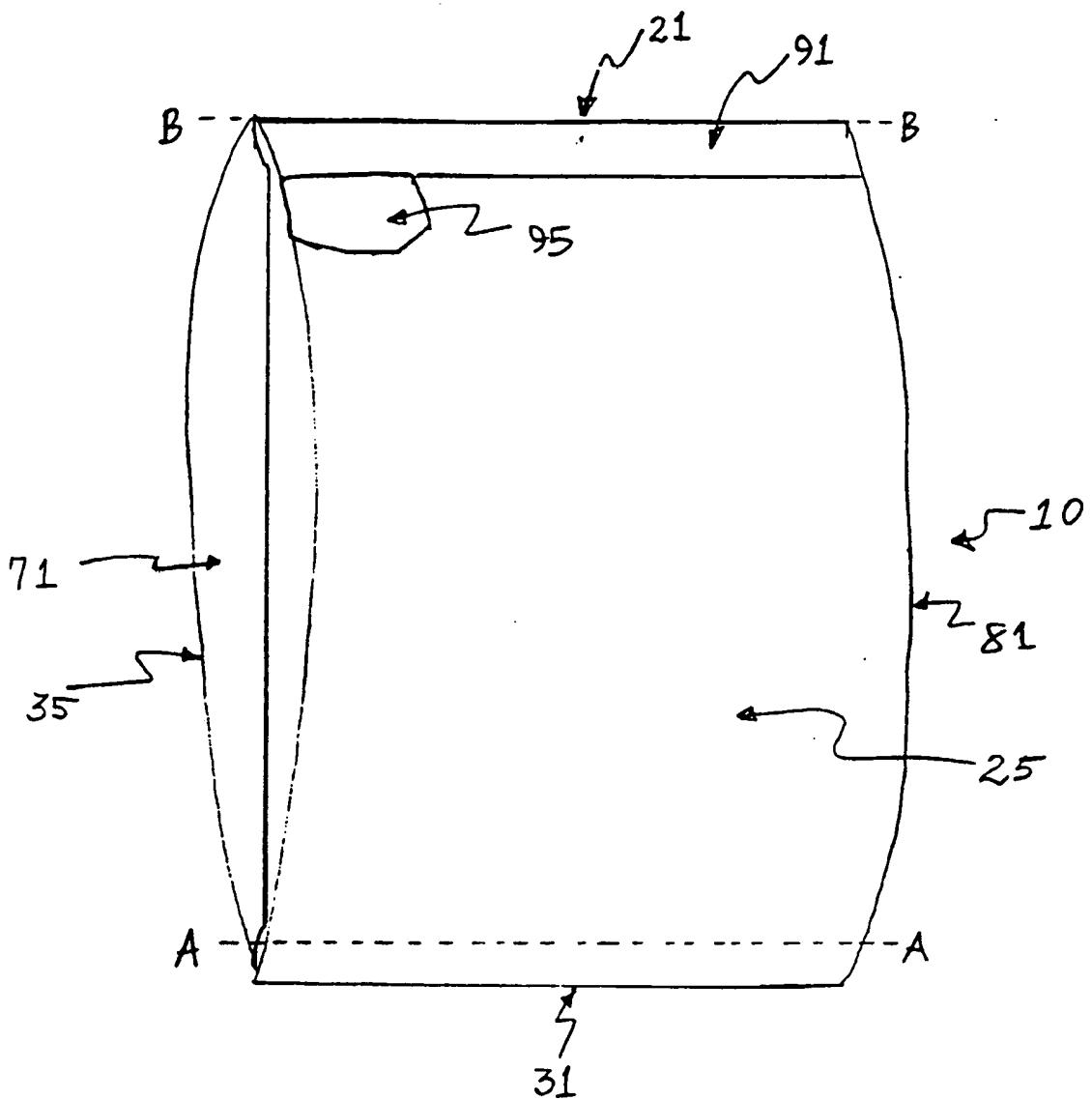


FIGURE 2

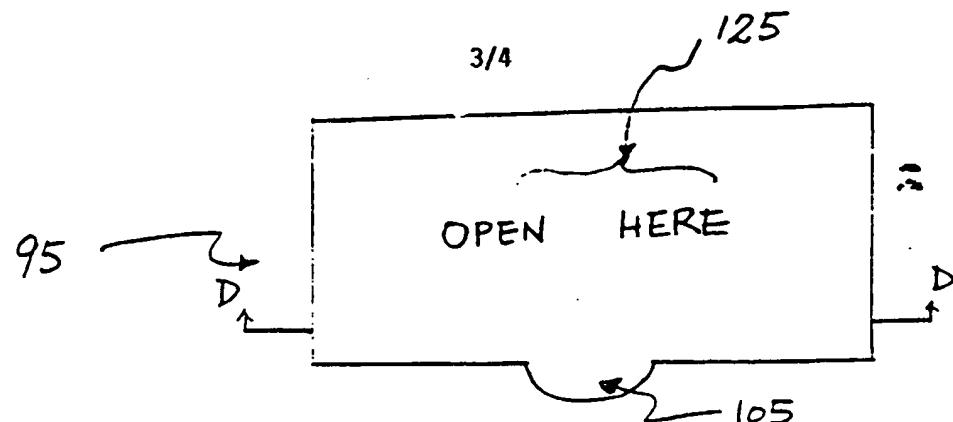


FIGURE 3(a)

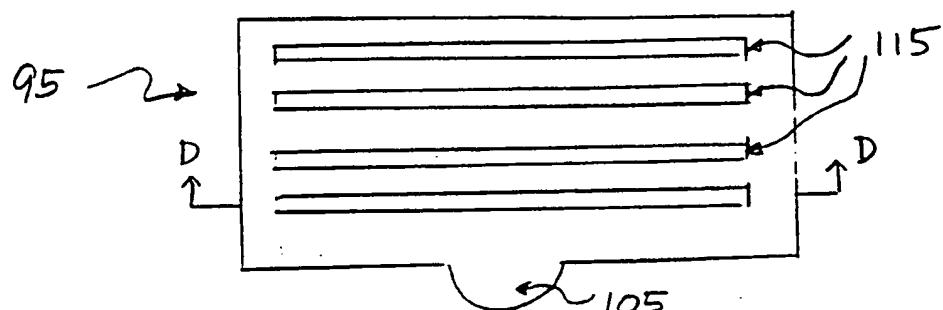


FIGURE 3(b)

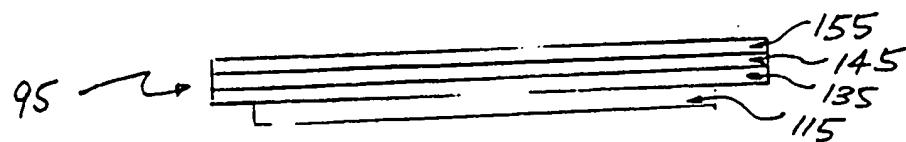


FIGURE 3(c)

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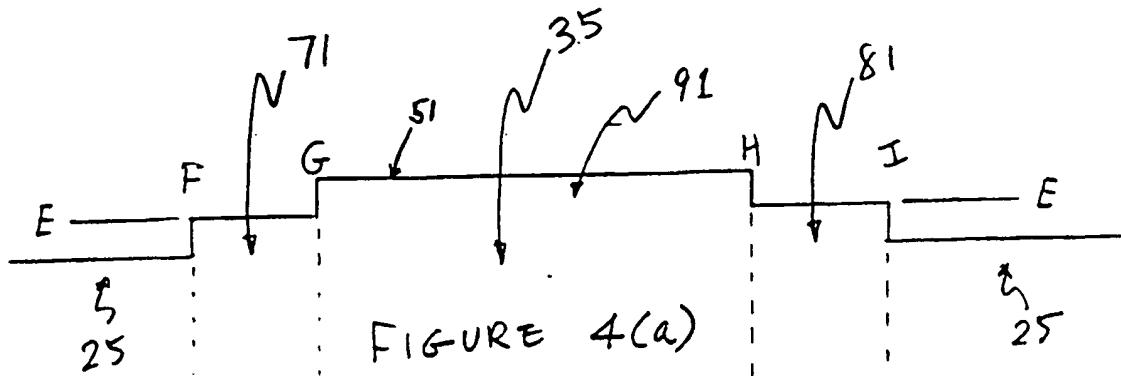


FIGURE 4(a)

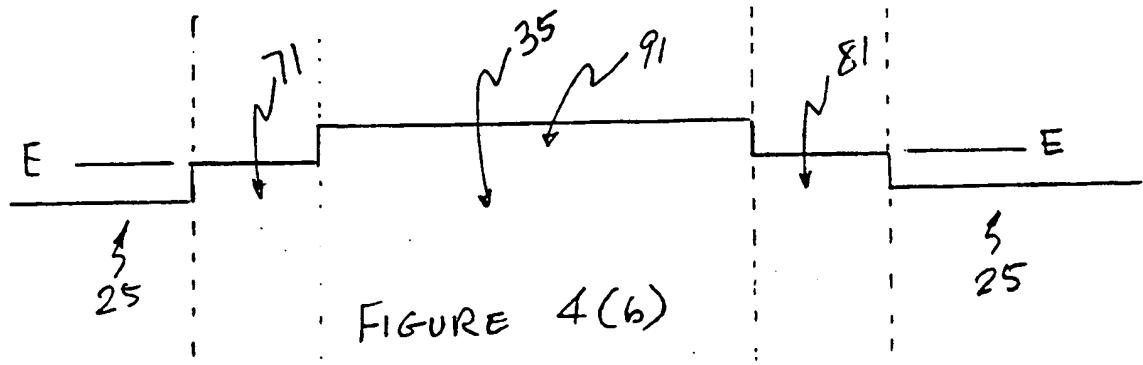


FIGURE 4(b)

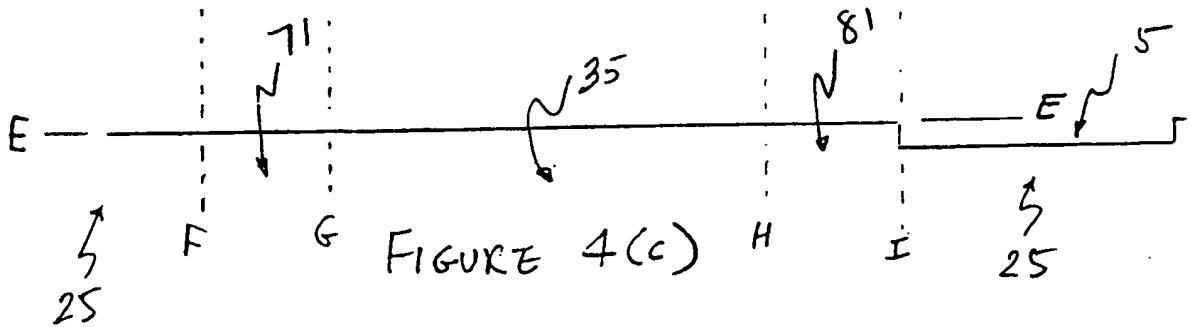


FIGURE 4(c)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/27157

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :B65D 33/00

US CL :383/85, 86, 109, 113, 123, 203, 205, 210, 211, 906

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 383/85, 86, 109, 113, 123, 203, 205, 210, 211, 906

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 6,048,100 A (<i>THRALL et al.</i>) 11 April 2000, See entire document.	1-11, 14-25, 28
Y, P	US 6,120,184 A (<i>LAURENCE et al.</i>) 19 September 2000, See entire document.	1-28

 Further documents are listed in the continuation of Box C. See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

16 JANUARY 2001

Date of mailing of the international search report

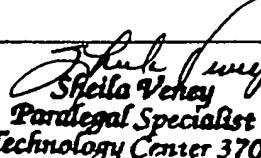
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